

APPLICATION OF SPACEBASED WIND AND WATER VAPOR  
OBSERVATIONS IN THE STUDIES OF THE ENERGY AND  
HYDROLOGIC BALANCE OVER OCEAN

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The unprecedented resolution and coverage of ocean surface wind speed and direction provided by the microwave scatterometer on IRS 1 are utilized to improve the estimation of vertical velocity profiles, atmospheric moisture transport, and ocean surface hydrologic forcing, in convective areas over global ocean and the results are validated against direct observations. Scatterometer winds are also combined with precipitable water observed by the Special Sensor Microwave Imager to estimate the integrated atmospheric water transport and its divergence is compared with hydrologic forcing (precipitation-evaporation) estimated directly from satellite observations. The seasonal and interannual variations of greenhouse warming estimated from the data of the Earth Radiation Budget Experiment are compared with sea surface temperature, atmospheric water vapor, and wind divergence estimated from spacebased observations. This study demonstrates the powerful synergism between wind and water vapor measured by spaceborne microwave sensors in furthering our understanding the energy and hydrologic balance.